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The opinion in support of the decision being entered today
and (1) was not written for publication in a law journal
(2) is not binding precedent of the Board.

Paper No. 58

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ORJAN STRANDBERG

Appeal No. 1996-1411
Application 08/237,393¹

HEARD: September 13, 1999

¹ Application for patent filed May 03, 1994. According to the appellant, this application is a continuation of 08/042,898, filed April 05, 1993, now abandoned which is a continuation of 07/571,585 filed August 30, 1990, now abandoned.

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Before JERRY SMITH, DIXON and LALL Administrative Patent Judges.

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 11-18 and 21. Claims 1-10 and 20 have been cancelled. Claim 19 has been indicated as containing allowable subject matter and is merely objected to for depending from a rejected claim. An amendment after final rejection was filed on June 2, 1995 and was entered by the examiner.

The disclosed invention pertains to a method and apparatus for generating animation by computer by combining prestored images of an object in various three-dimensional orientations with movements of an existing self-movable object. The movements of the object are measured and are used to calculate successive orientation angles of movement for each of several image sections. The successive orientation angles are used to address the prestored images which were

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prestored based on orientation angles. Animation occurs by successively assembling the prestored images based on the successive orientation calculations.

Representative claim 11 is reproduced as follows:

11. A method for producing computer processed animation, in which a work station comprising a computer and peripheral equipment produces each image in a graphic movement sequence for a graphic figure, by assembling information stored in a memory (7) concerning the figure to be animated based upon a recording of measured data from strategic parts of an existing self-movable object, e.g., a living actor, the graphic figure being divided into a plurality of image sections which are movable in relation to one another, said information stored in a memory (7) being a plurality of three-dimensionally represented perspective drawings of said image sections, each representing an image section of said graphic figure in a predetermined orientation, to be combined to produce a true three-dimensional animated figure in accordance with said recording measurement data, comprising the steps of:

a) as a preparation before assembling an image of the graphic figure to be animated, storing data recordings of said plurality of three-dimensionally represented perspective drawings in digitized form at mutually different addresses in a respective memory area in said memory (7), each perspective drawing being associated with an individual space angle position among a multiple of mutually different space angle positions, the address of each perspective drawing being based on its associated space angle position, and incorporating into each perspective drawing information regarding at least one joint location in the drawing

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for linking said perspective drawing to a three-dimensionally represented perspective drawing of another section;

b) deriving a space angle for a direction in space of each section from said measured data from said existing self-movable object;

c) matching an address in said memory (7) of each of said stored perspective drawings of each section with said derived space angle of each section for the image to be drawn;

d) assembling the graphic figure by assembling each image section in accordance with a predetermined sequential assembling schedule, section by section, each image section being

retrieved from said memory area by reading the memory at an address based on the derived space angle for the image section in question wherein each subsequent graphic figure image section is linked with a nearest preceding graphic figure image section at a joint location common to both said sections,

whereby said plurality of three-dimensionally represented perspective drawings of each image section making up said assembled graphic figure depict image sections that may have different proportions than the image sections of said self-movable object used to generate said space angles.

The examiner relies on the following references:

Haney	3,510,210	May 05, 1970
Appel et al. (Appel)	3,792,243	Feb. 12, 1974
Frazer et al. (Frazer) (UK patent application)	2 175 729	Dec. 03, 1986

Claims 11-18 and 21 stand rejected under 35 U.S.C. §

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103. As evidence of obviousness the examiner offers Haney in view of Appel or Frazer.

Rather than repeat the arguments of appellant or the examiner, we make reference to the briefs and the answer for the respective details thereof.

OPINION

We have carefully considered the subject matter on appeal, the rejection advanced by the examiner and the evidence of obviousness relied upon by the examiner as support for the rejection. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellant's arguments set forth in the briefs along with the examiner's rationale in support of the rejection and arguments in rebuttal set forth in the examiner's answer.

It is our view, after consideration of the record before us, that the evidence relied upon and the level of skill in the particular art would have suggested to one of ordinary skill in the art the obviousness of the invention as set forth in claims 11-18 and 21. Accordingly, we affirm.

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As a general proposition in an appeal involving a rejection under 35 U.S.C. § 103, an examiner is under a burden to make out a prima facie case of obviousness. If that burden is met, the burden of going forward then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See

In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976). Only those arguments actually made by appellant have been considered in this decision.

Arguments which appellant could have made but chose not to make in the brief have not been considered [see 37 CFR § 1.192(a)].

With respect to each of the claims on appeal, the examiner has pointed out the teachings of Haney, Appel and Frazer, has pointed out the perceived differences between this prior art and the claimed invention, and has reasonably

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indicated how and why Haney and Appel or Haney and Frazer would have been modified and/or combined to arrive at the claimed invention [answer, pages 3-5]. In our view, the examiner's analysis is sufficiently reasonable that we find that the examiner has satisfied the burden of presenting a prima facie case of obviousness. That is, the examiner's analysis, if left unrebutted, would be sufficient to support a rejection under

35 U.S.C. § 103. The burden is, therefore, upon appellant to come forward with evidence or arguments which persuasively rebut the examiner's prima facie case of obviousness.

Appellant has presented several substantive arguments in response to the examiner's rejection. Therefore, we consider obviousness based upon the totality of the evidence and the relative persuasiveness of the arguments.

We note that Haney teaches a computer for generating character animation by combining prestored images of an object with the actual movements of an actor. The prestored images

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in Haney are based upon a plurality of stances and positions of an animated character as determined in two dimensions. The actor's movements are monitored in two dimensions, and each of the actor's movements is used to address a corresponding prestored image section based on the direction of movement. The examiner recognizes that Haney is a two-dimensional system, and the examiner cites Appel or Frazer as teaching the desirability of monitoring the movements of an object in three dimensions.

Appellant first notes the deficiencies in each of the individual references [brief, pages 8-12]. Since we are considering a rejection on obviousness under 35 U.S.C. § 103 rather than anticipation under 35 U.S.C. § 102, we will not address the assertions that none of the applied prior art individually discloses the claimed invention.

With respect to independent claims 11 and 16, appellant argues that the examiner's rejection is based on an improper use of hindsight to reconstruct appellant's invention based on appellant's own disclosure [brief, page 13]. With respect to the three references applied by the examiner, appellant asserts that

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"such a combination, might, in a general manner, have suggested to one of ordinary skill in the art to practice the invention of HANEY, in some manner, using three-dimensional stored graphic images and three-dimensional input data from a living actor" [id.]. The following discussion will be based on our determination that the combined teachings of Haney, Appel and Frazer clearly would have suggested to the artisan that the animation system of Haney should be implemented in three dimensions in order to get a three-dimensional perspective of a character's movement.

Appellant argues that although Haney teaches the storage of previously generated images, there is no teaching or suggestion of using previously generated three-dimensionally represented drawings to represent the various spatial orientations of the image sections of a character [brief, page 14]. The difference between this argument and our determination that the collective prior art teaches implementing Haney in a three-dimensional manner is subtle at best. The three-dimensional aspect of the argument cannot be critical, the previously generated aspect of the argument cannot be critical, and the orientation aspect of the argument cannot be critical because a three-dimensional version of

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Haney would clearly

possess each of these characteristics. Haney already teaches the storage of previously generated two-dimensional picture orientations of characters. To extend the teachings of Haney to three dimensions as suggested by Appel or Frazer would require Haney to store previously generated three-dimensional spatial orientations of characters.

Appellant argues that "none of the applied references teach [sic] the concept of using the space angle information calculated from the recorded coordinate reference points on the moving actor, or the concept of retrieving the appropriate three-dimensionally represented perspective drawing corresponding to the calculated spatial orientation" [brief, page 14]. We do not agree. The determination of individual point movements in Haney in two dimensions allows the prestored image with the corresponding vector orientation to be selected. When Haney is modified to operate in three dimensions, the determination of point movements in three dimensions will necessitate that the vector orientations of Haney be replaced by the claimed spatial orientations to

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indicate three-dimensional movement. Likewise, the data stored in Haney based on two-dimensional stances and positions would have to be replaced by storage locations based on three-dimensional spatial orientations as claimed.

Appel also teaches that the movement of a point in three dimensions in space (XYZ) requires that a calculation be made to determine the spatial orientation of the movement. Note that Appel uses direction cosines of the angles made by the three-dimensional movement to determine the new orientation of the mannequin or actor [see column 6]. Thus, spatial orientation is clearly calculated from movement in three orthogonal directions in Appel, and this spatial orientation would be used to address the prestored three-dimensional orientations prestored in the Haney system as modified by Appel or Frazer.

Appellant argues the advantages obtained by using space angles, but we are unable to see how Haney could operate in three dimensions without the use of space angles which define the three-dimensional movement of an object in three-dimensional

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space. Appellant argues that his invention eliminates the requirement that the animated character bear a resemblance to the actor from which the data was obtained, however, we find nothing recited in the claims which defines this relationship, and the examiner has appropriately questioned just how much resemblance would be within the scope of the claims anyway.

Appellant argues that the whereby clause which ends claims 11 and 16 sufficiently distinguishes these claims from the

teachings of Haney, Appel and Frazer [brief, pages 15-16].

We fail to see how a whereby recitation which notes that the prestored images may have different proportions than the image sections of the self-movable object used to generate the space angles patentably distinguishes from the applied prior art.

As the examiner properly notes, there is no requirement in the applied prior art that proportions be exactly the same between prestored images and the movable object.

Appellant argues that the storing of three-dimensional images at unique addresses as claimed patentably distinguishes the claimed invention from the applied prior art. Again, we

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do not agree with appellant. The prestored images in Haney are based on different stances and positions [column 2, lines 39-42]. Thus, each prestored image differs from other prestored images in an orientation based on stance and position. Since each prestored image must have its own address, Haney teaches that there is a unique address which contains the prestored image for a measured and calculated amount of movement in two dimensions. When this teaching is extended to three dimensions as suggested by Appel or Frazer, there would be a unique address for each prestored image as it moves in three dimensions. Since the movement in three-dimensional space is uniquely identified by a

space angle, it would have been obvious to the artisan that the

unique vector addressing of Haney would be replaced by a comparable three-dimensional unique space angle addressing.

The arguments just considered essentially cover all the arguments made by appellant with respect to the rejection of independent claims 11 and 16. As noted above, we are not persuaded by any of these arguments that the rejection of

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claims 11 and 16 as formulated by the examiner is in error. Although none of the applied prior art references individually discloses the claimed invention, we agree with the examiner that the invention as broadly recited in claims 11 and 16 would have been obvious to the artisan when the Haney system is extended to operate in three dimensions as suggested by Appel or Frazar. Therefore, we sustain the rejection of claims 11 and 16 as expressed by the examiner.

With respect to dependent claims 12, 15 and 21, appellant argues that these claims recite how the calculated space angle of an image section of the actor's body can be logically paired with a unique and easily ascertainable address location in the computer's memory, and that there is no suggestion of this feature in the applied references [brief, pages 17-18]. Despite the length of claims 15 and 21, we construe these claims as

essentially reciting nothing more than a relationship that a movement in three-dimensional space can be uniquely determined by calculating angular movement through three orthogonal planes. Since this relationship is a well-known mathematical

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principle and since Appel teaches this relationship as well, we do not see the patentable distinction of storing orientation data based on three-dimensional space angle information. In our view, the Haney system modified to operate in three dimensions would obviously have prestored the data based on unique space angles within the meaning of 35 U.S.C. § 103. These unique space angles must include all the permutations of angular movement within each of the three orthogonal planes within the resolution desired by the user. Since it appears to us that claims 12, 15 and 21 simply recite an obvious relationship between three-dimensional angle data, we sustain the rejection of claims 12, 15 and 21.

With respect to dependent claims 13 and 17, appellant argues that the applied prior art does not teach or suggest the claimed linking of three-dimensional drawings section by section. We are not persuaded by appellant's argument, and we again agree with the examiner's position. Haney clearly teaches that an animated character is generated by linking prestored two-dimensional images of adjacent image sections. Haney always

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connects a foot to a leg. Thus, the linking principle is clearly present in Haney when assembling the animated image. When Haney is modified to operate in three dimensions, we agree with the examiner that the final animated three-dimensional character would be assembled by linking the prestored three-dimensional drawings section by section. Therefore, we sustain the rejection of claims 13 and 17.

With respect to dependent claims 14 and 18, appellant argues that the collective prior art does not suggest the graphic movement potential [brief, pages 21-22]. We agree with the examiner that the prestored images in Haney based on different stances and positions suggests the storage of a graphic movement potential. The various stances and positions in three dimensions would relate to the universe of movements that an object could make in three-dimensional space. We agree with the examiner that this would constitute a graphic movement potential as claimed. Therefore, we sustain the rejection of claims 14 and 18.

In summary, we have sustained the examiner's rejection of claims 11-18 and 21 under 35 U.S.C. § 103. Therefore, the

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decision of the examiner rejecting these claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

Jerry Smith)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
Parshotam S. Lall)	
Administrative Patent Judge)	APPEALS AND
)	
)	INTERFERENCES
)	
Joseph L. Dixon)	
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